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AGRICULTURAL EXPERIMENT STATION
BENJ. IDE WHEELER, PRESIDENT
THOMAS FORSYTH HUNT, DEAN AND DIRECTOR

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BOYS' AND GIRLS' CLUB CONTESTS, NO. 2
CLASS A — FOR BOYS

POTATO GROWING CLUBS

DEPARTMENT OF AGRICULTURAL EDUCATION

The Object.—The potato, with the single exception of rice, is the most extensively grown food plant in the world. There is not a county in California where potatoes cannot be grown, and it is the object of this circular to encourage boys and girls to enter a contest to see who can produce the largest yield of potatoes of the best quality, upon a given area of land. It is possible to grow over 600 bushels per acre, yet the average production throughout the United States is only about 90 bushels.

Organization Needed.—Boys and girls in each school should form a potato growing club along the lines suggested in Circular No. 80, a copy of which will be sent to every teacher and school upon request. Address The Dean, College of Agriculture, University of California, Berkeley. Elect the teacher, a club member, or somebody interested in potato growing, as the president or leader of the club. An organization with a definite purpose in view, i.e., the growing of potatoes, is necessary for a successful contest.

Nature of the Contest.—The awards will be given to the boys and girls who grow the largest number of merchantable potatoes upon a given area of land, and who select the three highest yielding hills of marketable potatoes from their patch and display the same at an exhibition or fair at the close of the contest. All the tubers from each selected hill should be saved, the product of the hills being kept separate in paper bags or boxes. The exhibit may be judged by means of a score card, one form of which is suggested on page 4. A note book, describing all of the work done from the plowing or spading of the soil to the harvesting of the crop (see "How the Crop was Grown," blank A, page 4), must also form a part of the exhibit.

Experimental Plant Growing.—Special experiments or problems have been outlined for the purpose of encouraging boys and girls to study the science of soils and of crop production. The problems should be worked out in the school garden whenever possible as part of the school work in Agriculture, but they may be solved at home when land at school is not available. Outlines of these problems will be sent to all teachers who request them and to students who enroll in the California Junior Experimental League. (Same address as for Circular No. 80.)

When to Plant.—This is a local question, dependent upon soil and climatic conditions, and which must be determined in each community. The planting of the main crop in California begins in January on the light, well-drained soils of Southern California, and continues throughout February, when many portions of the uplands of the central portion of the State are ready. During March, April and May, the soils of the upper coast valleys and the mountain

ranges become favorable for planting, as well as those of the river lowlands, which are drained of their surplus moisture. A general rule for each locality, would be to plant as early as soil and climatic conditions will favor growth.

Where to Plant.—Deep, rich, sandy loams are the best for potatoes, as they favor root development and growth of tubers and retain sufficient moisture to produce potatoes of quality. However, almost any kind of soil that is mellow, warm and contains the requisite plant food, will produce good crops. Plant on an alfalfa sod, if possible, but ordinary soil enriched with well-rotted manure the fall previous to planting, will do.

Preparing the Seed Bed.—If an old alfalfa soil can be secured, have it plowed or spaded during the fall or early winter. All potato soils should be made mellow to a good depth because the size of the crop depends upon an extensive and vigorous root system and this in turn depends upon a deep, mellow seed bed. Give the potato ground at least two plowing or spadings, the first turning to be finished before the winter rains begin. Frequent harrowings or rakings in the spring up to planting time will conserve moisture, produce good tilth and keep down weeds.

Choice of Varieties.—Many potato growers have not standardized their product, that is, they are growing several different varieties in the same field. The highest prices are paid for medium sized tubers of uniform shape and of the same type.

The Early Rose, Early Ohio and Bliss Triumph, are suggested for Southern California. The Burbank is still the dependable main crop potato, although the Snowflake, Pearl and Peerless are worth trying in many sections. Each club should find out what variety does best in its particular locality, and then grow that and no other.

Selection of Seed.—Seed potatoes should not be smaller than a hen's egg, and from that up to six ounces in weight. When potatoes are cheap, it will usually pay to plant the medium size, whole tubers as they favor the development of vigorous, heavy producing vines. Seed potatoes should be smooth, and of a type that the market demands, because of the tendency for the offspring to be like the parent. Rough, gnarly potatoes are not apt to produce smooth ones. The best time to select the seed potatoes for next year's planting is when this year's crop is being dug. Those hills having the healthiest and most vigorous vines and producing the largest number of merchantable tubers of uniform size and shape, should be reserved for seed.

Treatment for Scab.—A potato disease called Scab, which causes rough, warty spots on the tubers, is very prevalent in this State, and when club members find their seed potatoes to be affected, they should treat them with a fungicide. Do this about two weeks before planting, and make the fungicide by adding one ounce of formalin (which may be obtained at any drug store) to each two gallons of water used. Place the uncut seed potatoes in a bucket or tub, and then cover them with the diluted formalin solution. Allow the tubers to soak for two hours, then spread out to dry and leave exposed to the light (but not in direct sunlight) until planting time. They will turn more or less green, but greening is good for them as it hastens germination and will make the young plants more vigorous.

Cutting the Seed.—Most farmers plant only the small (egg-sized) tubers as seed, or, when using the larger sized seed, cut the tubers into "two" or "three eye" pieces. The approved method for cutting seed potatoes is to halve or quarter the tubers longitudinally. Cut from the eye end towards the stem end, using care so that there will be at least one of the "seed end" buds on each piece. Do not cut the tubers until ready to plant.

Planting, Depth and Distance Apart.—The depth and distance apart to plant potatoes depends upon soil conditions and the variety. Other things being equal, the dryer the soil, the greater the depth, and the richer and mellower the soil, the closer potatoes can be planted together. Early varieties may be planted much shallower than the late kind. In general, the seed should not be planted less than three, nor more than eight inches deep. In good potato soil the hills may be twelve to fifteen inches apart in the rows, and the rows two to three feet apart, depending upon the kind of cultivation used and whether the potatoes are irrigated or not. The amount of seed required depends upon the size of the seed piece and the distance of planting. A peck to 100-foot row, or 8 to 10 bushels per acre is the amount usually required.

Whether the seed is dropped in furrows made with a plow or hoe, or are planted in some other manner, they should be covered as soon as possible, so as to be surrounded with the moist earth. Plant in straight rows to make cultivation and irrigation easier.

Cultivation.—If the seed bed has been properly prepared and the crop properly planted, it will not be necessary to stir the ground until the plants appear. However, if a crust forms after planting, it should be broken with the harrow or rake. As soon as the plants are up so that the rows can be seen, given them a good cultivation with a spike-toothed harrow or a garden rake, the kind of implement used depending upon the size of the plat.

The first row cultivation should be done with a small shovel cultivator when the plants are three to six inches high, breaking up the middle of the rows to a depth of four to 6 inches. All later cultivation should be done with a spike-tooth cultivator or a hand rake, and the cultivator teeth should not penetrate to a depth of over three inches. Flat cultivation is the general practice, excepting when it is necessary to make a furrow or depression between the rows in order to irrigate. In the Lompoc or Salinas districts in this State, however, the growers have found it necessary to ridge the potato rows, so contestants must be guided by the general practice in their neighborhood as to whether they will practice ridge of flat culture. Good cultivation will maintain a dust mulch throughout the season, thus preserving the moisture and not permitting weeds to grow.

Irrigation.—The time to apply water and the amount to use varies with the soil and the season. A general rule must suffice here. Irrigation water should be applied only when the condition of the plants indicates that they need moisture. The rather sudden darkening of the foliage is a reliable indication of the need of moisture. Or, one may dig into the soil between the hills and try to make a ball out of a handful of earth; if it fails to retain its form, irrigation is needed. Try to carry the vines through the blossoming period, if possible, without irrigation. The general rule will be, however, to irrigate when moisture is needed by the plant, regardless of everything else.

Irrigate the first time by running the water between alternate rows. Let the water run in the rows until it has seeped through and moistened the middles of the non-irrigated rows. This is a sign that enough water has been applied. Try to apply the water in deep, narrow furrows in the middle of the rows so that the soil immediately surrounding the tubers will be moistened by capillary water rather than being made wet with percolating water.

At the second irrigation run the water down the rows that were not irrigated the first time, and so on throughout the season, if more applications are needed. Cultivate as soon as possible after each irrigation so as to check

evaporation and prevent the ground from baking. Refrain from irrigation for at least twenty to thirty days before digging time, so that the tubers can ripen in a fairly dry soil. Give potatoes just enough water to keep healthy and vigorous, but do not over-irrigate. Too much water rather than too little, is being used by most potato growers when irrigation is practiced.

Harvesting.—Potatoes are usually dug with a machine potato digger, but probably all of the club members will have to "lift" their crop by hand with a potato hook or fork. Dig each hill carefully and keep the tubers separate from those of all other hills so that the three best hills can be more readily selected. Keep the product of these selected hills in a cool, dark place until the fair or exhibition time. Sack up the remaining hills in the usual way, weigh the entire product and store in a suitable place until they are sold or used.

SUGGESTED SCORE CARD FOR POTATO GROWING CONTESTS.

	Value.	Score.
Largest authenticated yield (from a given area or number of hills)	25	
Note book (for neatness, accuracy and completeness)	25	
Potato Exhibit (all the tubers in the three best hills must be exhibited and will constitute one entry; the tubers from each hill should be kept separate and be displayed separately)	50	
Uniformity and appearance of exhibit	10	
Trueness to type (characteristics of the variety)	10	
Table value, judged on the following points:	30	
Shape.....5 (Round or oval shape preferred.)		
Size.....5 (Medium size, rather than very large.)		
Eyes.....5 (Medium depth, well defined and not too numerous.)		
Skin.....5 (Thick, fairly tough skin, free from blemishes.)		
Texture.....5 (A fine grained, brittle texture is preferred.)		
Soundness.....5 (Sound and firm; test for hollowness and texture by cutting open the three largest tubers.)		
Total, a possible	100	

How the Crop was Grown.

Note books should give full information concerning each of the following points:

1. Name of contestant; address; school attended.
2. Area of plot in square rods or total length of rows; number of hills planted.
3. Kind of soil: Sand, clay, loam, adobe, humus, peat.
4. Kind of crop grown on plot year before.
5. Kind, amount and value of fertilizer used.
6. Preparation of soil; date and depth of each plowing, spading, harrowing, raking, etc.
7. Variety planted.
8. Where seed was obtained.
9. Amount of seed required.
10. Describe treatment of seed for scab.
11. Method of "greening" and cutting seed.
12. Date and method of planting.
13. Date when vines came up and when in full bloom.
14. Dates and manner of irrigating.
15. Dates and method of cultivation.
16. Date of harvesting.
17. Yield of plot in pounds.